# Remote Sensing Imagery for Visual Interpretation Metadata (200704)

Identification_Information:
Citation:
Citation_Information:
Originator: Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Centers for Coastal Ocean Science (NCCOS), Center for Coastal Monitoring and Assessment (CCMA), Biogeography Program
Publication_Date: 2000
Title: Hawaii Hyperspectral Imagery 2000 (417-0620-272217) - Visual Interpretation from Remote Sensing Imagery, Main Eight Hawaiian Islands
Geospatial_Data_Presentation_Form: remote sensing image
Publication_Information:
Publication_Place: Silver Spring, MD
Publisher: NOAA's Ocean Service, National Centers for Coastal Ocean Science (NCCOS)
Online_Linkage:
http://ccma.nos.noaa.gov/products/biogeography/hawaii_cd/htm/overview.htm
Larger_Work_Citation:
Citation_Information:
Originator: Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Centers for Coastal Ocean Science (NCCOS), Center for Coastal Monitoring and Assessment (CCMA), Biogeography Program
Publication_Date: 2002
Title: Benthic Habitats of the Main Hawaiian Islands Prepared by Visual Interpretation from Remote Sensing Imagery Collected by NOAA Year 2000
Geospatial_Data_Presentation_Form: map
Publication_Information:
Publication_Place: Silver Spring, MD
Publisher: NOAA's Ocean Service, National Centers for Coastal Ocean Science (NCCOS)
Online_Linkage:
http://ccma.nos.noaa.gov/products/biogeography/hawaii_cd/htm/overview.htm
Description:
Abstract: This project is a cooperative effort between the National Ocean Service, National Centers for Coastal Ocean Science, Center for Coastal Monitoring and Assessment, the University of Hawaii, and Analytical Laboratories of Hawaii, LLC. The goal of the work was to develop coral reef mapping methods and compare benthic habitat maps generated by photointerpreting georeferenced color aerial photography, hyperspectral and IKONOS satellite imagery.

The enhanced spectral resolution of hyperspectral and control of bandwidths of multispectral data yield an advantage over color aerial photography particularly when coral health and time series analysis of coral reef community structure are of interest. Depending on the type of instrument, a spectral imaging system can be utilized to see multiple colors from ultraviolet through the far infrared range. The AURORA hyperspectral imaging system collected 72 ten nm bands in the visible and near infrared spectral range with a 3 meter pixel resolution. The data was processed to select band widths, which optimized feature detection in shallow and deep water.

Photointerpreters can accurately and reliably delineate boundaries of features in the imagery as they appear on the computer monitor using a software interface such as the Habitat Digitizer.
Purpose: The National Ocean Service is conducting research to digitally map biotic resources and coordinate a long-term monitoring program that can detect and predict change in U.S. coral reefs, and their associated habitats and biological communities.
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 2000
Currentness_Reference: ground condition
Status:
Progress: Complete
Maintenance_and_Update_Frequency: None planned
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -156.0816
East_Bounding_Coordinate: -155.8536
North_Bounding_Coordinate: 19.7913
South_Bounding_Coordinate: 19.3355
Keywords:
Theme:
Theme_Keyword_Thesaurus: CoRIS Discovery Thesaurus
Theme_Keyword: Map Images > Hyperspectral Imagery
Theme:
Theme_Keyword_Thesaurus: CoRIS Theme Thesaurus
Theme_Keyword: Mapping > Base map > Hyper/multispectral imagery
Theme_Keyword: EARTH SCIENCE > Biosphere > Zoology > Corals > Reef monitoring and assessment > Mapping > Base map > Hyper/multispectral imagery
Theme_Keyword: Mapping > Habitat mapping
Theme_Keyword: EARTH SCIENCE > Biosphere > Zoology > Corals > Reef monitoring and assessment > Mapping > Habitat mapping
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: coral
Theme_Keyword: seagrass
Theme_Keyword: SAV
Theme_Keyword: reef
Theme_Keyword: AURORA hyperspectral imagery
Theme_Keyword: benthic
Theme_Keyword: habitat
Theme_Keyword: mangrove
Theme_Keyword: oceans
Theme:
Theme_Keyword_Thesaurus: ISO 19115:2003 MD_TopicCategoryCode
Theme_Keyword: imageryBaseMapsEarthCover
Theme_Keyword: 010
Place:
Place_Keyword_Thesaurus: CoRIS Place Thesaurus
Place_Keyword: OCEAN BASIN > Pacific Ocean > Central Pacific Ocean > Hawaiian Islands > Hawaii Island > Hawaii Island (19N155W0003)
Place_Keyword: COUNTRY/TERRITORY > United States of America > Hawaii > Hawaii > Hawaii Island (19N155W0003)
Place:
Place_Keyword_Thesaurus: None

Place_Keyword: U.S. Exclusive Economic Zone
Place_Keyword: United States
Place_Keyword: Hawaii
Place_Keyword: Island of Hawaii
Access_Constraints: None
Use_Constraints: None
Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Centers for Coastal Ocean Science (NCCOS), Center for Coastal Monitoring and Assessment (CCMA), Biogeography Program
Contact_Position: Biogeography Team Leader, Mapping Manager
Contact_Address:
Address_Type: mailing and physical address
Address: 1305 East West Highway, N/SCI-1
City: Silver Spring
State_or_Province: MD
Postal_Code: 20910
Contact_Voice_Telephone: 301-713-3028
Contact_Facsimile_Telephone: 301-713-4388
Contact_Electronic_Mail_Address: matt.kendall@noaa.gov
Hours_of_Service: 0800-1700, Monday to Friday, EST
Native_Data_Set_Environment: Microsoft Windows 2000 Version 5.0 (Build 2195) Service Pack 3; ESRI ArcCatalog 8.2.0.700
Data_Quality_Information:
Logical_Consistency_Report: All habitat delineations were completed by a photointerpreter on data that had been processed only to maximize specific band widths for viewing data at varying depths.
Completeness_Report: Habitat delineations could be made accurately in water depths up to 30 meters. Band combinations were selected which optimized benthic habitat information in shallow and deep water and the scenes were converted into RGB composites.

The shallow band IDs and centers were configured as:
1) Band 17 at 508.319 nm
2) Band 22 at 547.918 nm
3) Band 27 at 605.516 nm

The deep band IDs and centers were configured as:
1) Band 11 at 450.001 nm
2) Band 22 at 547.918 nm
3) Band 33 at 663.835 nm
Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy_Report: The hyperspectral imagery were obtained at a 3 meter pixel resolution
Lineage:
Process_Step:
Process_Description: The hyperspectral image data were collected using the AURORA Hyperspectral Imaging data acquisition system (Advanced Power Technologies, Inc). Navigation data were incorporated using the Applanix inertial navigation system. The imaging system was used to collect 72 ten nm bands in the visible and

near infrared spectral range at a three meter pixel resolution.
Process_Date: 20000620
Process_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Advanced Power Technologies, Inc.
Contact_Person: Joe Senftle
Contact_Position: Civil Hyperspectral Technologies Contact
Contact_Address:
Address_Type: mailing and physical address
Address: 1250 24th Street NW, Suite 800
City: Washington
State_or_Province: DC
Postal_Code: 20037
Contact_Voice_Telephone: 202-223-8808
Contact_Facsimile_Telephone: 202-223-1377
Process_Step:
Process_Description: The raw data were processed by the Analytical Laboratories of Hawaii, LLC using Research Systems, Inc. ENVI software. Band combinations were selected which optimized benthic habitat information in shallow and deep water and the scenes were converted into RGB composites. The hyperspectral images were georeferenced and mosaiced using Scene Stitcher, a stand-alone software program produced by Advanced Power Technologies, Inc.
Process_Date: 2002
Process_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Analytical Laboratories of Hawaii, LLC
Contact_Person: Miles Anderson
Contact_Position: Principle Investigator
Contact_Address:
Address_Type: mailing and physical address
Address: 1320 Aalapapa Drive
City: Kailua
State_or_Province: Hawaii
Postal_Code: 96734
Contact_Voice_Telephone: 808-262-2417
Contact_Facsimile_Telephone: 808-262-7027
Contact_Electronic_Mail_Address: miles@interpac.net
Hours_of_Service: 0800-1700, Monday to Friday, HST
Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Raster
Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Grid_Coordinate_System:
Grid_Coordinate_System_Name: Universal Transverse Mercator
Universal_Transverse_Mercator:
UTM_Zone_Number: 5
Transverse_Mercator:
Scale_Factor_at_Central_Meridian: 0.9996
Longitude_of_Central_Meridian: -153
Latitude_of_Projection_Origin: 0.0
False_Easting: 500000
False_Northing: 0.0

Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: Row and Column
Coordinate_Representation:
Abscissa_Resolution: 3.0
Ordinate_Resolution: 3.0
Planar_Distance_Units: meters
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1983
Ellipsoid_Name: Geodetic Reference System 80
Semi-major_Axis: 6378137
Denominator_of_Flattening_Ratio: 298.257
Distribution_Information:
Distributor:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Centers for Coastal Ocean Science (NCCOS), Center for Coastal Monitoring and Assessment (CCMA), Biogeography Program
Contact_Position: Biogeography Team Leader, Mapping Manager
Contact_Address:
Address_Type: mailing and physical address
Address: 1305 East West Highway, N/SCI-1
City: Silver Spring
State_or_Province: MD
Postal_Code: 20910
Contact_Voice_Telephone: 301-713-3028
Contact_Facsimile_Telephone: 301-713-4388
Contact_Electronic_Mail_Address: matt.kendall@noaa.gov
Hours_of_Service: 0800-1700, Monday to Friday, EST
Resource_Description: Downloadable Data
Distribution_Liability: NOAA makes no warranty regarding these data, expressed or implied, nor
does the fact of distribution constitute such a warranty. NOAA and NODC cannot assume liability for any damages caused by any errors or omissions in these data, nor as a result of the failure of these data to function on a particular system.The National Oceanic and Atmospheric Administration (NOAA) National Centers for Coastal Ocean Science (NCCOS) produced this data CD-ROM. NCCOS Biogeography Program does not guarantee the accuracy of the geographic features or attributes.
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Format_Name: MrSID
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: http://ccma.nos.noaa.gov/products/biogeography/hawaii_cd/htm/flightln.htm
Network_Resource_Name: http://ccma.nos.noaa.gov/products/biogeography/hawaii_cd/htm/hawaiifl.htm
Network_Resource_Name: http://ccma.nos.noaa.gov/products/biogeography/hawaii_cd/data/mosaics/417-0620-HSI.zip
Fees: Free

Ordering_Instructions: A flightline containing hyperspectral imagery will have two separate image files representing a subset of 6 bands from the 72 original bands collected. File naming convention is as follows 'flightline number-date(s) acquired-hyperspectral or airphoto imagery'. Hyperspectral flightline files will end in either 272217 or 332211 representing the band number in the respective file. Band numbers equate to the following spectral wavelength in nanometers: 27-605.51991, 22- 556.918030, 17- 508.319000, 33- 663.835022, and 11-450.001007. These approximate true-color band combinations were chosen to highlight shallow (272217) and deep (332211) water benthic features. Note that the resolution of the georeferenced imagery has been degraded significantly to reduce file size and facilitate internet viewing.

Metadata_Reference_Information:
Metadata_Date: 20030811
Metadata_Review_Date: 20030813
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Centers for Coastal Ocean Science (NCCOS), Center for Coastal Monitoring and Assessment (CCMA), Biogeography Program
Contact_Position: Biogeography Team Leader, Mapping Manager
Contact_Address:
Address_Type: mailing and physical address
Address: 1305 East West Highway
City: Silver Spring
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Contact_Voice_Telephone: 301-713-3028
Contact_Facsimile_Telephone: 301-713-4384
Contact_Electronic_Mail_Address: tim.battista@noaa.gov
Hours_of_Service: 0800 - 1700, Monday to Friday, EST
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: Local Time